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DIVISION 14 - CONVEYING EQUIPMENT

ELECTRIC TRACTION ELEVATORS

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ELECTRIC TRACTION ELEVATORS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1/D1.1M	(2010; Errata 2010) Structural Welding Code - Steel

ASME INTERNATIONAL (ASME)

ASME A17.1/CSA B44	(2010) Safety Code for Elevators and Escalators
ASME A17.1	(2010) Safety Code for Elevators and Escalators
ASME A17.2	(2010) Guide for Inspection of Elevators, Escalators, and Moving Walks Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, and Escalators and Moving Walks

INTERNATIONAL CODE COUNCIL (ICC)

ICC UBC	(1997; Erratas Vol 1, 2 & 3 01/2001; Vol 1 & 2 03/2001; Vol 2 10/2001) Uniform Building Code

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2011; Errata 2 2012) National Electrical Code

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

36 CFR 1191	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines

1.2 SYSTEM DESCRIPTIONS

1.2.1 General Requirements

A

The Contractor shall modify the existing elevators 13 and 14 controllers and control logic and field devices to all for new vehicle-side elevator

A

lobbies being installed under this contract. Elevator lobbies shall allow for the vertical adjustment of the new and existing (11 total in each of two towers, E and F, including the ground floor) vehicle-side elevator lobbies.

Program logic shall allow for the automatic adjustment of travel distances and lobby locations after lobbies have been moved. At no time shall the vehicle-side cab doors be allowed to open unless the associated lobby is in place and has been secured. In addition, the Contractor shall provide all necessary appliances to add new fixed tower elevator landings as identified in the contract drawings.

Existing elevator drives, motors, hoist ways, pit equipment, cabs, lobbies, landings, call buttons, and any other devices used in the operation of the existing elevators shall be re-used, unless by doing so, personnel safety or violation governing codes are at risk.

Section 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL applies to work specified in this section.

Connection Diagrams shall be submitted for electrical passenger elevator systems indicating the relations and connections of devices and apparatus by showing the general physical layout of all controls, the interconnection of one system with another (or portion thereof) and internal tubing, wiring, and other devices.

Schematics shall be submitted for elevator systems including annotated ladder logic diagrams for programmable logic controllers.

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The Contractor shall test existing elevators 13, 14, 15, and 16 in accordance with paragraph 3.2.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Elevator and accessories; G

Supporting systems; G

Machinery and controls; G

Wiring diagrams; G

Sequence of operations; G

SD-03 Product Data

Elevator and accessories; G

Elevator supporting systems; G

Data sheets; G

SD-05 Design Data

Reaction loads; G

SD-07 Certificates

Welders' qualifications; G

SD-10 Operation and Maintenance Data

Elevator, Data Package 4; G

1.4 QUALITY ASSURANCE

1.4.1 Qualification

Provide pre-engineered elevator system by a manufacturer regularly engaged in the manufacture of elevator systems. The manufacturer shall either install elevator system or shall provide letter of endorsement certifying that the elevator-system installer is acceptable to the manufacturer. An installer is required to be regularly engaged in the installation and maintenance of elevator system.

1.4.2 Shop Drawing Requirements

Provide assembly and arrangement of elevators, accessories, and supporting systems. Show location of machinery and controls in machine room. Provide details for materials and equipment, including but not limited to operating and signal fixtures, doors, door and car frames, car enclosure, controllers, motors, guide rails and brackets, layout of hoistway in plan and elevation, and other layout information and clearance dimensions. Submit complete wiring diagrams and sequence of operations, which show electrical connections and functions of elevator systems, for the machine room, hall and in the hoistway. Provide one set of wiring diagrams in plastic or glass cover, framed and mounted in the elevator machine room. Deliver other sets to the Contracting Officer. Coded diagrams are not acceptable unless adequately identified.

1.4.3 Product Data Requirements

Include information on motor, hall station, and buffer on elevators and accessories. For elevator supporting systems, include information on car control and emergency power systems, and for data sheets, provide document identification number or bulletin number, published or copyrighted prior to the date of contract bid opening.

1.4.4 Design Data: Reaction Load Data Requirements

Provide calculations to the Contracting Officer for reaction loads imposed on building by elevator system. Demonstrate calculations complying with ASME A17.1/CSA B44. Provide calculations certified by a licensed structural engineer registered in any state. Do not fabricate materials nor perform construction until approved by the Contracting Officer.

1.4.5 Certificates: Welders' Requirements

Comply with AWS D1.1/D1.1M, Section 5. Include certified copies of welders' qualifications. List welders' names with corresponding code marks to identify each welder's welding work.

PART 2 PRODUCTS

2.1 ELEVATOR DESCRIPTION

Provide elevator system that complies with ASME A17.1/CSA B44 in its entirety, ASME A17.2 in its entirety, and additional requirements specified herein.

2.1.1 Passenger Elevators

a. Type: Gearless

b. Rated load: 8,000 lb.

c. Rated Speed: 700 fpm

d. Travel Length: 419 ft. 9 in.

e. Number of Stops: 32

f. Number of Hoistway Openings: 32 Front; 11 Rear

g. Car Inside Dimensions: Existing Cars

h. Car Door Opening: 5 ft. 0 in. wide and 8 ft. 1/4 in. high

i. Car Door Types: Single-speed Center opening Horizontal sliding.

2.1.1.1 Cab Enclosures and Door Finishes

Existing cab enclosures and finishes to remain.

a. Hoistway Doors and Frame Finishes

Provide finishes on exterior of hoistway as follows:

(1). Frame; stainless steel.

(2). Exterior face of door; prefinished steel.

2.2 SPECIAL OPERATION AND CONTROL

Provide all special operations and control systems in accordance with ASME A17.1/CSA B44. Provide special operation key switches with 6 pin cylinder locks with removable cores. Provide a key control lock for each operation system.

2.2.1 Firefighters' Service

Existing to remain.

2.2.2 Smoke Detectors

Existing to remain.

2.2.3 Top-of-Car Operating Device

Existing to remain.

2.2.4 Hoistway Access Switches

Existing to remain.

2.2.5 Independent Service

Existing to remain.

2.2.6 Elevator Operation

ASME A17.1/CSA B44.

2.2.6.1 Duplex Selective Collective Automatic Operations

Provide Duplex Selective Collective Automatic Operation. Provide a single push button for terminal landings and dual push buttons, up and down, at intermediate landings. If a car is taken out of service or fails to respond to a landing call within a predetermined adjustable time limit of approximately 40 to 180 seconds, transfer calls to the other car functioning as a single car Selective Collective elevator until the out-of-service car is returned to the system. Provide a push button riser adjacent to each elevator.

2.2.7 Emergency Commandeering Service

Provide "ON-OFF" key switch and indicator light at all landings to cause one elevator to respond directly to the landing activated. Turning switch to "ON" position cancels previously registered "CAR" calls and requires car to bypass hall calls while in route to activated landing.

On arrival, car will remain at landing with hoistway and car doors open for predetermined time to permit car to be placed on emergency service. If the person decides not to use car during predetermined time period, car doors will close and car will automatically return to normal service. Indicator lights shall automatically illuminate during emergency service. Key shall be removable only in "OFF" position.

2.3 ELEVATOR MACHINE

Existing elevator machine to remain.

2.4 CONTROL EQUIPMENT

2.4.1 Elevator Control Equipment

The Contractor shall provide all electrical components and devices, support hardware, fasteners, interconnecting wiring and/or piping required to make all new adjustable elevator platform lobbies functional. All wiring to panel connections from field instruments, devices, and other panels shall be terminated at master numbered terminal strips. The bottom six inches of all free standing panels shall be free of all devices, including terminal strips.

2.4.2 Programmable Logic Control (PLC)

The existing PLCs shall be reprogrammed as required to include new platform I/O points. These existing PLCs shall continue to function as currently programmed with exception of the additional platform landing stops made

available.

2.5 OPERATING PANELS, SIGNAL FIXTURES, AND COMMUNICATIONS CABINETS

2.5.1 Capacity and Data Plates

Existing to remain.

2.5.2 Car and Hall Buttons

Provide recessed tamper-proof push buttons of minimum 3/4 inch size satin-finish stainless steel with illuminated jewel center.

2.5.2.1 Hall Station Door Operating Buttons

Identical in size and design to hall call buttons, but not illuminated.

2.5.3 Passenger Car-Operating Panel

ASME A17.1/CSA B44, Section 211 and 306. Existing passenger car-operating panels shall be updated to include: New landing buttons, labeling and necessary control programming to provide access to new and modified access points. Provide exposed, flush mounted buttons for the controls that must be passenger accessible. Provide service cabinet or keyed switches for these controls that should not be passenger accessible. Use engraving and backfilling or photo etching for button and switch designators. Do use attached signs.

2.5.3.1 Passenger Controls

Existing to be modified.

a. Illuminated operating call buttons identified to correspond to landings served by elevator car. For two openings at a floor, provide two buttons marked "FRONT" and "REAR" above button location.

b. "DOOR OPEN" and "DOOR CLOSE" buttons, existing to remain.

c. Keyed "STOP" switch, existing to remain.

d. "ALARM" button, existing to remain.

e. "FIRE DEPARTMENT" key switch, existing to remain.

f. Emergency two-way communication, existing to remain.

2.5.3.2 Service Controls

Existing to remain.

2.5.3.3 Certificate Window

Existing to remain.

2.5.4 Semi-Selective Door Operation

Existing to remain.

2.5.5 Switches and Devices

Existing to remain.

2.5.6 In-Car Position and Direction Indicator and Signal

Existing to remain.

2.5.6.1 In-Car Position Indicator and Signal

Existing to remain.

2.5.6.2 In-Car Direction Indicator and Signal

Existing to remain.

2.5.7 Landing Position and Direction Indicator and Signal

Provide a single fixture containing the landing position and direction indicators.

2.5.7.1 Landing Position Indicator and Signal

Provide an electrical or electronic digital position indicator similar to the car position indicator. Arrange position indicator in wall horizontally above the door frame or vertically at the side of the door frame. Indicators to show floor position of car in hoistway. Indicate position by illumination of numeral or letter corresponding to landing at which car is passing or stopping.

2.5.7.2 Landing Direction Indicator and Signal

Provide landing direction indicator with visual and audible signal devices. Provide single direction indicator at terminal floors; "UP" and "DOWN" direction indicator at intermediate floors. Provide equilateral triangles not less than 2 1/2 inches in size, green for upward direction and red for downward direction. Provide electronic audible device that sounds once for upward direction and twice for downward direction. Provide audible signals exceeding ambient noise level by at least 20 decibels with frequency not higher than 1500 Hz.

2.6 HOISTWAY AND CAR EQUIPMENT

ASME A17.1/CSA B44, Parts I and II.

2.6.1 Car and Counterweight Guide Rails and Fastenings

Existing to remain.

2.6.2 Car and Counterweight Buffers

Existing to remain.

2.6.3 Pit Equipment

Existing to remain.

2.6.3.1 Pit "STOP" Switch

Existing to remain.

2.6.3.2 Ladder

Existing to remain.

2.6.3.3 Lighting of Pits

Existing to remain.

2.6.4 Terminal Stopping Devices

Existing to remain.

2.6.5 Wiring and Traveling Cables

Existing to remain.

2.6.6 Emergency Signaling Devices

Existing to remain.

2.7 HOISTWAY DOOR ACCESSORIES

ASME A17.1/CSA B44. Provide high-speed electric operator, safety interlocks for hoistway doors, and electric safety contact to prevent car operation unless doors are closed. Provide electrical circuitry that restores car to service at specified time lapse with time out circuit as option for intensive service elevators.

2.7.1 Infra-red Curtain Unit

Existing to remain.

2.8 PASSENGER ELEVATOR GUIDES, PLATFORM, AND ENCLOSURE

2.8.1 Roller Guides

Existing to remain.

2.8.2 Car Frame and Platform

Existing to remain.

2.8.3 Car Enclosure, Car Door, and Car Illumination

Existing to remain.

2.8.3.1 Car Shell Return Panels, Entrance Columns, Cove Base, and Transom

Existing to remain.

2.8.3.2 Car Top

Existing to remain.

2.8.3.3 Car Door

Existing to remain.

2.8.3.4 Car Entrance Sill

Existing to remain.

2.9 PASSENGER ELEVATOR HOISTWAY DOORS AND ENTRANCES

ASME A17.1/CSA B44. Provide hoistway entrance assemblies with a minimum 1-1/2 hour fire rating.

2.9.1 Hoistway Entrance Frames

14 gauge stainless steel.

2.9.2 Hoistway Entrance Sills

For new hoistway entrances, provide one-piece cast solid white bronze or nickel silver entrance sills. After sill is set level and flush with finished floor height, solidly grout under full length of sill. Use same materials for hoistway and car entrance sills.

2.9.3 Hoistway Entrance Doors

ASME A17.1/CSA B44, hollow metal non-vision construction with flush surfaces on car and landing sides. Provide a minimum of 2 door guide assemblies per door panel, one guide at leading edge and one at trailing edge with guides in the sill groove the entire length of travel. Provide sheet metal hoistway door track dust covers at each landing. Dust covers must cover door locks and door roller tracks and extend the full width of the door track and associated hardware. Existing hoistway entrance doors contain asbestos. Any alteration to these doors must include processes and proceedures involved with asbestos containment and removal.

2.9.4 Entrance Fascias and Dust Covers

ASME A17.1/CSA B44.

2.10 MEDICAL SERVICES ACCESS

36 CFR 1191, Sections 4.10 for Elevator, 4.30 for Signage, and 4.31 for Telephones.

2.10.1 Emergency Medical Services

ICC UBC, Chapter 30 for elevators and signage.

PART 3 EXECUTION

3.1 INSTALLATION

Install in accordance with manufacturer's instructions, ASME A17.1/CSA B44, 36 CFR 1191, and NFPA 70.

3.1.1 Structural Members

Do not cut or alter. Restore any damaged or defaced work to original

condition.

3.1.2 Safety Guards

Selector cables or tapes exposed to possibility of accidental contact in machine room shall be completely enclosed with 16 gage sheet metal or expanded metal guards, both horizontally and vertically. Exposed gears, sprockets, tape or rope sheaves, floor controllers, or signal machines, and their driving ropes, chains or tapes, and selector drums shall be guarded from accidental contact in accordance with ASME A17.1/CSA B44.

3.1.3 Miscellaneous Requirements

Include recesses, cutouts, slots, holes, patching, grouting, and refinishing to accommodate elevator installation. Use core drilling to drill all new holes in concrete. Finish work to be straight, level, and plumb. During installation, protect machinery and equipment from dirt, water, or mechanical damage. At completion, clean all work, and spot paint.

3.2 FIELD QUALITY CONTROL

After completing elevators system installation, notify Contracting Officer that elevator system is ready for final inspection and acceptance test.

3.2.1 Testing Materials and Instruments

Furnish testing materials and instruments required for final inspection. Include calibrated test weights, tachometer, 600-volt megohm meter, volt meter and ammeter, three Celsius calibrated thermometers, door pressure gage, spirit level, stop watch, dynamometer, and 100 foot tape measure.

3.2.2 Field Tests

Perform acceptance tests as outlined in section ASME A17.1 and ASME A17.2 under alterations.

3.2.2.1 Leveling Tests

Test existing elevator car leveling devices for landing accuracy of plus or minus 1/4 inch at each introduced or relocated floor with no load in car, symmetrical load in car, and with rated load in car in both directions of travel. Determine accuracy of floor landing both before and immediately after endurance tests.

3.2.2.2 Insulation Resistance Tests

Perform tests to ensure elevator platform wiring systems installed as part of alterations, are free from short circuits and grounds. Minimum acceptable insulation resistance for electrical conductors is one megohm between each conductor and ground and between each conductor and other conductors. Prior to megohm meter test, make provisions to prevent damage to electronic devices.

3.3 MAINTENANCE SERVICE TRAINING

Provide qualified representative of elevator manufacturer to instruct Government personnel in care, adjustment, and maintenance of elevator equipment installed as part of these alterations, for a period of not less than 5 working days immediately following acceptance of elevator system.

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